

REMARKS

Claims 1, 3-7, 11-32, and 35-39 are pending in the above-captioned application. Claims 15-32 were previously withdrawn. Claims 2, 8-10, 33, and 34 have been cancelled. Claims 35-39 have been added. Claims 1, 3-7, and 11-14 have been amended. Claims 1, 7, 36, and 38 are in independent form.

Claim Rejections – 35 U.S.C. §112

1-2. Claims 1-14 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and claim the subject matter which applicant regards as the invention. Applicant respectfully traverses the rejection.

The Examiner states that it is unclear what the applicant is trying to claim by “symmetrical to the axis of rotation.” In response, Applicant has amended claims 1 and 7 by deleting “symmetrical to the axis of rotation.” Thus, the rejection is moot.

Claim Rejections – 35 U.S.C. §103

3-4. Claims 1-2, 4-10, and 12-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent Application Publication 2004/0161723 to Helfenbein (“the ’723 reference”) in view of U.S. Patent 5,924,865 to Quinn (“the ’865 reference”). Applicant respectfully traverses the rejection.

The ’723 reference discloses a handpiece 1 for a surgical or dental tool 3, which can be inserted through an insertion hole 14 into a tool holder 2. A drive gear 9 in the handpiece 1 transmits torque to the tool 3. Positive torque transmission occurs in a region 8 between a sleeve-like extension 11 of the drive gear 9 and the shaft of the tool 3. The shaft of the tool 3 has a bulge 10 and the inner contour of the sleeve-like extension 11 corresponds to the outer contour of the bulge 10.

The ’865 reference discloses a handpiece 1 including a chuck 13 for receiving a bur 15 which has a bur shaft 17. The bur shaft 17 has an axially extending flat 19. The chuck 13 includes a bur tube 41 journaled in a driven gear 47. The bur tube 41 includes a transverse slot

54. A retainer key 57 is received in the transverse slot 54 and engages the flat 19 to rotationally fix the bur 15 with respect to the bur tube 41. The bur tube 41 also includes a finger 77 received in a groove 21 of the bur shaft 17 to secure the bur shaft 17 in the handpiece 1.

Claim 1, as amended, includes the limitation "a torque transfer arrangement received in the axial bore of the drive for transferring torque generated by the drive to the rotatable tool when inserted into the handpiece, the torque transfer arrangement including a spindle received in the axial bore of the drive and having an axial tool bore for receiving the tool shaft, the spindle being connected to the drive for torque transmission, the spindle further including a tool retaining arrangement for releasably retaining the tool shaft in the axial tool bore against axial movement upon insertion of the tool shaft into the axial tool bore, and a torque lock in the axial tool bore of the spindle independent of the tool retaining arrangement for concentrically receiving the torque lock portion of the tool shaft, the torque lock having a non-circular cross-section complementary to the torque lock portion of the tool shaft to prevent rotation of the torque lock portion of the tool shaft in the torque lock, while permitting axial insertion of the torque lock portion of the tool shaft into the torque lock, the torque lock being connected to the spindle for rotation therewith."

The cited references do not disclose a torque transfer arrangement including a spindle received in an axial bore of a drive and having an axial tool bore for receiving a tool shaft, the spindle being connected to the drive for torque transmission, the spindle further including a tool retaining arrangement for releasably retaining the tool shaft in the axial tool bore against axial movement, and a torque lock in the axial tool bore of the spindle for concentrically receiving a non-circular torque lock portion of the tool shaft, the torque lock having a non-circular cross-section complementary to the torque lock portion to prevent rotation of the torque lock portion in the torque lock while permitting axial insertion of the torque lock portion into the torque lock, the torque lock being connected to the spindle for rotation therewith. In the '723 reference, torque transmission occurs between the sleeve-like extension 11 of the drive gear 9 and the bulge 10 on the shaft of the tool 3. Clearly, the '723 reference does not disclose a torque transfer arrangement including a spindle received in an axial bore of the drive gear 9, the spindle having an axial tool bore for receiving the shaft of the tool 3

and a tool retaining arrangement for releasably retaining the shaft of the tool 3 in the axial tool bore of the spindle and a torque lock in the axial tool bore of the spindle for concentrically receiving the bulge 10 (i.e., non-circular shaft portion) on the shaft of the tool 3, as specifically required by amended claim 1 of the above-captioned application. Thus, the '723 reference does not disclose each and every element of amended claim 1. In addition, modifying the '723 reference with a turbine system as disclosed in the '865 reference does not disclose each and every element of amended claim 1.

In the '865 reference, torque transmission occurs between the bur tube 41 and the bur shaft 17 due to the retainer key 57 disposed in the transverse slot 54 of the bur tube 41 interacting with the flat 19 in the bur shaft 17. More specifically, torque transmission in the '865 reference is reliant on matching the cross-section shape of the bur tube 41 with the cross-section shape of the bur shaft 17 by inserting the retainer key 57 into the transverse slot 54. In other words, the '865 reference does not disclose a torque transfer arrangement including a torque lock in an axial tool bore of a spindle for concentrically receiving a non-circular shaft portion of the bur shaft 17, as specifically required by amended claim 1 of the above-captioned application. On the other hand, torque transmission in the above-captioned application is not reliant on the cross-section shape of the spindle (220) or matching the cross-section shape of the spindle (220) with the non-circular shaft portion (83) of the tool (80). Instead, torque transmission is dependent on the torque lock (221) that is in the axial tool bore (221) of the spindle (220). In the above-captioned application it is important that the torque lock (210) is housed in the axial tool bore (221) of the spindle (220) and is not incorporated into the spindle (220) because the handpiece (10) can be easily adapted to tools (80) having differently shaped non-circular shaft portions (83) simply by replacing the torque lock (210) in the spindle (220), without any other changes to the handpiece (10), such as replacing the spindle (220). Thus, the '865 reference does not disclose each and every element of amended claim 1.

Further, combining the cited references does not result in the combination of features disclosed in amended claim 1. As a result, Applicant contends that the claimed invention would not have been obvious to one skilled in the art at the time of invention. Therefore, claim 1 is allowable.

Applicant has cancelled claim 2.

Claims 4-6 depend from claim 1 and, as such, are construed to incorporate by reference all the limitations of the claim to which they refer, *see* 35 U.S.C. §112, fourth paragraph. Therefore, claims 4-6 are allowable.

Claim 7, as amended, claims a torque transfer arrangement including "a spindle received in the axial bore of the drive and having an axial tool bore for receiving the burr shaft, the spindle being connectable with the drive for torque transmission, the spindle further including a burr retaining arrangement for releasably retaining the burr shaft in the axial tool bore against axial movement upon insertion of the burr shaft into the axial tool bore; and a torque lock in the axial tool bore of the spindle independent of the burr retaining arrangement for receiving the torque lock portion of the burr shaft, the torque lock having a non-circular cross-section complementary to the torque lock portion of the burr shaft to prevent rotation of the burr shaft in the torque lock while permitting axial insertion of the torque lock portion of the burr shaft into the torque lock, the torque lock being connected to the spindle for rotation therewith."

As set forth above with respect to claim 1, the '723 reference does not disclose each and every element of amended claim 7. In addition, modifying the '723 reference with a turbine system as disclosed in the '865 reference does not disclose each and every element of amended claim 7.

Similarly, the '865 reference does not disclose each and every element of amended claim 7. Further, combining the cited references does not result in the combination of features disclosed in amended claim 7. As a result, Applicant contends that the claimed invention would not have been obvious to one skilled in the art at the time of invention. Therefore, claim 7 is allowable.

Applicant has cancelled claims 8-10.

Claims 12-14 depend from claim 7 and, as such, are construed to incorporate by reference all the limitations of the claim to which they refer, *see* 35 U.S.C. §112, fourth paragraph. Therefore, claims 12-14 are allowable.

Therefore, Applicant respectfully requests that the rejection of claims 1-2, 4-10, and 12-14 under 35 U.S.C. §103(a) as being unpatentable over the '723 reference in view of the '865 reference be withdrawn.

5. Claims 3 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the '723 reference in view of U.S. Patent 6,305,935 to Cardarelli ("the '935 reference"). Applicant respectfully traverses the rejection.

The disclosure of the '723 reference is set forth above.

The '935 reference discloses a disposable contra-angle 20 for use with a drill bur member 24. The angle 20 includes a driven rotating mandrel 45 having an axis pole 71 defining a chamber 73 therein. The chamber 73 has a flat luted surface 72 on one side. The bur member 24 has a top shaft section 56 with a flat surface 61 extending along part of its length. The flat surface 61 juxtaposes along the lute surface 72 of the chamber 73, to prevent slippage of the bur member 24 while it is engaged within the chamber 73.

The cited references do not disclose a torque transfer arrangement including a spindle received in an axial bore of a drive and having an axial tool bore for receiving a tool shaft, the spindle being connected to the drive for torque transmission, the spindle further including a tool retaining arrangement for releasably retaining the tool shaft in the axial tool bore against axial movement, and a torque lock in the axial tool bore of the spindle for concentrically receiving a non-circular torque lock portion of the tool shaft, the torque lock having a non-circular cross-section complementary to the torque lock portion to prevent rotation of the torque lock portion in the torque lock while permitting axial insertion of the torque lock portion into the torque lock, the torque lock being connected to the spindle for rotation therewith. As set forth above, the '723 reference does not disclose each and every element of amended claims 1 and 7.

In the '935 reference, torque transmission occurs between the axis pole 71 and the top shaft section 56 due to the flat luted surface 72 of the axis pole 71 interacting with the flat surface 61 of the bur member 24. More specifically, torque transmission in the '935 reference is reliant on matching the cross-section shape of the axis pole 71 with the cross-section shape of the

top shaft section 56 of the bur member 24. In other words, the '935 reference does not disclose a torque transfer arrangement including a torque lock in an axial tool bore of a spindle for concentrically receiving a non-circular shaft portion of the bur member 24, as specifically required by amended claims 1 or 7 of the above-captioned application. On the other hand, torque transmission in the above-captioned application is not reliant on the cross-section shape of the spindle (220) or matching the cross-section shape of the spindle (220) with the non-circular shaft portion (83) of the tool (80). Instead, torque transmission is dependent on the torque lock (221) that is in the axial tool bore (221) of the spindle (220). In the above-captioned application it is important that the torque lock (210) is housed in the axial tool bore (221) of the spindle (220) and is not incorporated into the spindle (220) because the handpiece (10) can be easily adapted to tools (80) having differently shaped non-circular shaft portions (83) simply by replacing the torque lock (210) in the spindle (220), without any other changes to the handpiece (10), such as replacing the spindle (220). Thus, the '935 reference does not disclose each and every element of amended claims 1 and 7.

Further, combining the cited references does not result in the combination of features disclosed in amended claims 1 and 7. As a result, Applicant contends that the claimed invention would not have been obvious to one skilled in the art at the time of invention.

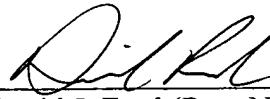
Claims 3 and 11 depend respectively from claims 1 and 7 and, as such, each is construed to incorporate by reference all the limitations of the claim to which it refers, *see* 35 U.S.C. §112, fourth paragraph. Therefore, claims 3 and 11 are allowable.

Therefore, Applicant respectfully requests that the rejection of claims 3 and 11 under 35 U.S.C. §103(a) as being unpatentable over the '723 reference in view of the '935 reference be withdrawn.

It is respectfully submitted that this patent application is in condition for allowance, which allowance is respectfully solicited. If the Examiner has any questions regarding this amendment or the patent application, the Examiner is invited to contact the undersigned.

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